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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/058,398	01/30/2002	Michael H. Schmitt	111225	4748

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EXAMINER	
KUMAR, PREETI	

ART UNIT	PAPER NUMBER
1751	5

DATE MAILED: 03/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/058,398	SCHMITT, MICHAEL H.	
	Examiner	Art Unit	
	Preeti Kumar	1751	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 January 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Claims 1-38 are pending.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-30, 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Cates et al. (US 4,759,770).

Cates et al. teach simultaneous dyeing and flame-resistant property improvement of poly(m-phenyleneisophthalamide) fibers using a swelling agent to introduce a dye

and a fire retardant into the fiber. The dyed fiber has properties of strength approximating the original undyed fiber, fire retardance greater than the untreated fiber and is conveniently dyed to an unlimited range of colors with high color yield and relatively good lightfastness at a reasonable cost. An aqueous dimethylsulfoxide solution is used as the swelling agent. See abstract.

Cates et al. teach suitable swelling agents are selected from dimethylsulfoxide (DMSO), dimethylacetamide (DMAc), and N-methylpyrrolidone; DMSO is preferred. Suitable inert diluents include water, xylene (ortho, meta or para-dimethylbenzene), lower alkene glycols such as ethylene glycol and propylene glycol, alcohols such as n-propanol, methanol, benzyl alcohol, 4-butyrolactone, all of which are compatible with DMSO as the swelling agent, or other relatively high boiling organic liquids otherwise suited to the dyeing process. The selection of swelling agent and diluent is guided by optimum color yield balanced with minimum fiber damage. Cates et al. teach that the swelling agent modifies the aromatic polyamide fiber by allowing both the dye and the fire retardant to enter the fiber. Examination by mass spectroscopy fails to reveal any swelling agent (DMSO) in a fiber dyed by the process of this invention. On the basis of washfastness and durability data for the dyed and fire retarded fabrics, Cates et al. teach that the mechanism of dye attachment and fire retardant attachment to the fiber is a physical entrapment rather than a chemical covalent bonding. The absence of swelling agent in the fiber following treatment provides an odor-free product, allowing the swelling agent to be more efficiently recovered and permits practice of the invention without untoward environmental concerns. See col.4, ln.35-55.

Specifically, Cates et al. teach a process for the simultaneous dyeing and flame retarding a poly(m-phenyleneisophthalamide) fiber, comprising the steps of: (1) contacting a dyeable poly(m-phenyleneisophthalamide) fiber with a solution of an organic swelling agent adapted to swell said fiber and selected from the group consisting of N-methylpyrrolidone, dimethylsulfoxide, and dimethylacetamide, and a diluent, in which the weight ratio of swelling agent to diluent is from about 70:30 to 90:10, a solvent-compatible dyestuff dissolved in said solution and a flame retardant, the solution maintained at a temperature in the range of about 65° F. to about 200° F.; (2) heating the poly(m-phenyleneisophthalamide) fiber treated in step (1) to fix said dye and said flame retardant to said fiber; (3) washing the fiber to remove any residual dye, organic swelling agent or flame retardant; and (4) drying the fiber. See example 1 and claim 1, col.7-8. Accordingly, the broad teachings of Cates et al. appear to anticipate the material limitations of the instant claims.

6. Claims 1-8 and 26-38 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over English et al. (US 5,855,623).

English et al. teach a method for treating polyester, polyamide, acrylic, aramid or cellulosic substrates to improve the uniformity of dyeing and to improve the hydrophilic properties of these substrates. See abstract and col.12, ln.50-65.

English et al. teach that the process of treating polyamide, acrylic, aramid and cellulosic substrates with reference to polyamide fibers for convenience. However, treatment of each polymer substrate and blends thereof and substrates having other forms is contemplated in the process of the invention. The treatment process has the

following basic steps: (1) The polyamide fibers are preferably initially scoured with an aqueous alkaline solution. This initial scouring step improves the uniform polymerization of the monomer on the substrate fibers. (2) The scoured fibers are contacted with an aqueous solution having a pH below 7 but above where acid degradation of the polymer fiber occurs, and a temperature between about 75° C. and about 100° C. and containing at least one unsaturated monomer. In this step, the surface of the polymer fiber is affected and has essentially single molecule addition of a monomer pendent to the polymer fiber. The solution is preferably agitated or forced to flow among the fibers for a sufficient time to allow uniform dispersal and intimate contact of the monomer with the fiber surfaces. (3) Thereafter polymerization of the monomer on the polymer fiber surfaces is initiated using a polymerization initiator, such as a persulfate or peroxide compound. The polymerization is then continued for a sufficient time to allow substantial graft polymerization of the monomer on the fiber surfaces to modify the surface characteristics of the polymer fibers. See col.14, ln.3-23.

Specifically regarding claim 4, English et al. teach aramid fibers which may be treated by the process of the invention include aramids include fibers in which at least 85% of the amide linkages are directly joined to two aromatic rings and in which imide groups may be substituted for up to 50% of the amide groups (aromatic polyamide-imide polymers) such as poly(m-phenylene isophthalamide) sold as NOMEX by duPont and CONEX by Teijin. Poly(p-phenylene teraphthalamide) is commercially available as KEVLAR from duPont. See col.13, ln.25-40.

Specifically regarding claims 31-36, English et al. teach the utility of a wide variety of surfactants including anionic surfactants such as alkyl sulfonates, alkyl sulfate, sulfated oil or fat, sulfated glycol ester, sulfated alkanolamide, sulfated alkylphenol polyglycol, sodium xylene sulfonate, sodium dibutyl naphthalene sulfonate, sodium dodecylbenzene sulfonate, sodium sulfonate of naphthalene formaldehyde condensate, sulfonated amide, monoalkyl phosphate salt, dialkyl phosphate salt, trialkyl phosphate, neutralized carboxylic acids (i.e. sodium stearate) and sulfated ethers. Suitable surfactants also include amphoteric examples such as alkyl glycine, N-alkylbetaine, imidazoline glycine, sulfated polyglycol amine, and alkyl amine sulfonate. Further suitable surfactants include cationic examples such as quaternary ammonium compounds, fatty amine salts, alkylamine polyoxyethanol glycols, fatty alkyl dimethyl benzyl ammonium chloride, lauryl pyridinium chloride, N-acyl,N'-hydroxyethyl ethylene diamine, N-alkyl, N'-hydroxyethyl imidazoline and amino amides.

Specifically regarding claims 26-28, English et al. teach that the treated polyamide substrate is washed with a warm alkaline rinse solution to a final pH of about 9-9.5. Suitable alkali solutions may contain any suitable alkali, e.g., phosphate, hydroxide, carbonate, ammonia organic amines, etc. See col.17, ln.65-col.18, ln.3. English et al. teach that the polyamide substrate may be treated in a continuous processing mode, wherein the polyamide is prepared and scoured to remove knitting oils and waxes, etc. See col.19, ln.65-col.20, ln.3.

Accordingly, the broad teachings of English et al. appear to anticipate the material limitations of the instant claims.

Alternatively, even if the broad teachings of English et al. are not sufficient to anticipate the material limitations of the instant claims, it would have been nonetheless obvious to one of ordinary skill in the art, to arrive at an agent for removing a water-insoluble finish from aramide fibers, wherein the treated aramide fibers have a swelling value of <40% that comprises a defoamer in the specific amount as recited by the instant claims because the teachings of English et al. teach the use of various surfactants in a process for making aramid fibers more hydrophilic. Furthermore, it would have been nonetheless obvious to one of ordinary skill in the art, to treat the aramide fibers in a mixture with other fibers because English et al. teach a process of contacting a polyamide, acriylic, aramid, or cellulosic substrate with an aqueous mixture to form a surface modified substrate.

7. Claims 1, 14-25 and 38 are rejected under 35 U.S.C. 103(a) as obvious over Ghorashi (US 5,096,459).

Ghorashi teaches a method of dyeing a tow of poly(m-phenylene isophthalamide) fibers, which have been previously dried, comprising the steps of padding onto the surface of the fibers of the two an aqueous solution of from about 0.5 to 5 wt. % of a carrier, based on the weight of the fibers, and from about 0.5 to 5 wt. % of a water-soluble dye, based on the weight of the fibers, and thereafter heating the two with steam at a temperature of about 120° C. for a time sufficient to dye the fibers on and closely adjacent the surface thereof. By raising the steam temperature to about 165° C., the fibers may be more completely dyed, substantially to the center thereof. In preferred embodiments of this invention, the amount of carrier padded onto the fibers can be from

about 1 to 2 wt. % and the amount of dye from about 2 to 3 wt. %, based on the weight of the fibers. This minimal use of carrier greatly reduces any disposal problems since much of the remaining carrier dissipates or is distilled off with the steam, while still providing improved deep color dyeing of the two. See col.2, ln.50-col.3, ln.5. Ghorashi teaches that the fibers become "water swollen" with a water content of 35% or more. See col.4, ln.20-22.

In examples 1 and 2, Ghorashi illustrates the use of alcohol and acetophenone and other components in a process that would inherently remove the water insoluble coating of the aramid fibers in process of dyeing the fiber with the water soluble dye. See col.5-6, examples 1 and 2.

However Ghorashi does not specifically teach a process of removing a water insoluble finish from aramide fibers with and agent comprising butyrolactone or methanol in the specific proportions as recited by the instant claims.

It would have been nonetheless obvious to one of ordinary skill in the art, to arrive at a process of removing a water insoluble finish from aramide fibers with an agent comprising butyrolactone or methanol in the specific proportions as recited by the instant claims because Ghorashi teaches the use of aliphatic alcohol and an aliphatic cyclic ester in a process of dyeing aramid fiber with water soluble dyes in general. Furthermore, the process taught by Ghorashi that would inherently remove the water insoluble coating of the aramid fibers to allow for the water soluble dye to be absorbed into the aramid fiber.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Remaining references cited but not relied upon are considered to be cumulative to or less pertinent than those relied upon or discussed above. Applicant is reminded that any evidence to be presented in accordance with 37 CFR 1.131 or 1.132 should be submitted before final rejection in order to be considered timely.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Preeti Kumar whose telephone number is 703-305-0178. The examiner can normally be reached on M-F 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 703-308-4708. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-872-9309.

Preeti Kumar
Examiner
Art Unit 1751

PK
March 10, 2003

Mark Kopec
Primary Examiner